Maritime trade Ceramics found in Myanmar
「ミャンマーで発見された貿易陶磁器について」

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Abstract

Imported trade ceramics are found at the sites in Twante, Yangon Division, Bago in Bago Division, Myaungmya-myohaung in Ayeyarwady Division and Moattama in Mon State located in Lower Myanmar. These imported ceramics are also unearthed at site of Bagan, Mandalay Division in Upper Myanmar.

Most Findings of imported ceramics in Myanmar are Chinese wares. Some European porcelain and Thai iron glazed wares were also found. Fortunately, a shard of Japanese ceramic, characteristic of Hizen kiln, between Meiji era and Taisho era (Meiji Era: 1868-1912), was rarely found. Although Chinese, Japanese and European wares were brought to Myanmar through maritime trade route, Thai ceramics arrived directly through interrelationship between Thai and Myanmar people. Most of the imported ceramics mentioned in this paper are uncovered at the bank of Twante canal. The findings of various types of trade ceramics reveal that Twante canal was used as a trading port from 14th century to early 20th century. The period of imported ceramics found in Myanmar sites can be confirmed by identifying characteristics of other similar trade ceramics unearthed from the sites in Indonesia, Philippines, the United Arab Emirates and Japan.

Aim of study

Research on imported ceramics found in Myanmar plays as an important part in trade ceramic study to link the history of maritime trade among the coastal countries. As a Myanmar researcher, I feel that it is important for me to study not only on Myanmar ceramics but also imported ceramic wares found in Myanmar sites with a view to understand socio-economic status of the past societies.

Actually the collection of imported ceramics found in Myanmar in this paper is very small quantity because local peoples and some visitors who interested in ceramics had already been collected in Twante canal since a few decades ago. And the enthusiastic persons like U Than Tin, U Win Kyaing, Buddhist monks, Saya-daw U Bakula, Nyaung-wine monastery and Sayar-daw U Arira-wuntha, Kyone-gyi monastery, Twante are collected numerous numbers of ceramic shards from Twante canal and other sites around the vicinity of Twante. Some local people bring the interested ceramic shards of their collected finds to the monks to store at the monasteries. I collected data and finds from these persons. The ancient imported wares and local ceramics still exist in the ancient sites not only in Twante canal but also in other different archaeological sites in Myanmar. To maintain these ancient sites and archaeological finds, and revealing their cultural heritage are essential in archaeological field. In this paper, I introduce and report findings and information on considerable numbers of trade ceramics, imported trade ceramics found in Myanmar which were collected by my research. In addition, I mentioned there some collected wares of previous researchers.

1. Historical setting

Myanmar is situated in Southeast Asian countries. Southern and southwestern parts are surrounded by the sea. Inland road and maritime route have been used for trading between Myanmar and other countries since ancient time.

Inland route from Yunan to Myanmar was used for long time ago. This route passed through Taiping River and connected to Bhamo-Myitkyina road. It is about twenty miles north of Bhamo. Goods were loaded to ship along the Ayeyarwady River until delta region. From the delta region, those goods were trans-shipped to India, Southeast Asia and other countries from the Port of Martaban.

During the Song dynasty (907-1279), Martaban and Mergui harbours were important links for trading between China, India and other countries. In the 14th century, demand of Arab and Indian Traders on large jars was very high because they would like to store liquid and foodstuffs. In addition to the Arab and India, later, European traders also demanded those large jars. According to the historical sources mostly refer to the fact that the jars were produced locally in Myanmar.

Martaban was dominated by Sukothai from 1281 to 1314.

From Martaban to Tenasserim (Tanintharyi) area was under Ayuthian control from the mid-14th to soon after mid-15th centuries. By the middle of 15th century, Mon Dynasty (Pegu kingdom) dominated ports of Bassein (Pathein) and Martaban. These ports were well known to Chinese merchants at this time for trading. It is clear that, Twante canal had also played as an important link to connect Martaban and Pathein ports because of the development of maritime trading.

In addition, merchants from Bago exported gold, rubies, musk, tin and Martaban jars to Malacca. Dutch sources in the 17th century mentioned that the Peguans also brought their wares to Aceh and to Banten in the Northwestern coast of Java.

In 1625, the Dutch settled in Arakan (Rakhine), and opened their commercial offices in Syriam (Than-lyin) and Ava (Inn-wa) in 1635. Although function of Martaban was stopped after the Burmese (Myanmar) attack in 1613, the jars production was continued. The Dutch closed their offices in Burma around 1680, but most probably the jars continued to be transported for a long time along the traditional sea routes between Burma, Malacca and Indonesia (Adhyatman, 1984, 63-66).

According to the previous reports, trade relationship is clearly found among Myanmar merchants, Southeast Asian and European traders in early 10th century to 17th century. Maritime route played as main trading route by using Martaban harbour before 14th century among Southeast Asian and Arabian countries.

The similar types of trade ceramics could be confirmed among the imported trade wares found in sites of Myanmar and sites in Indonesia and Philippines. These ancient trade ceramics found in archaeological sites are the evidences to trace ancient trade routes, and prove the previous historical information.

2. Twante canal site (Figure 1, Map1)

Twante (Tuntay), 24 kilometers southwest of Yangon, is an ancient city. It is a famous town for its pottery, cotton weaving industries, and Shwesandaw pagoda (golden hair

Figure 1 View of Twante canal with ceramic finds and the characteristic of ancient Kiln

Map 1 Twante Canal and its surround area

relic) built by the Mons over two thousand years ago. It was an important pottery centre in the Mon era. The ancient kilns of celadon wares are profusely found around Twante region. The trace of kiln site is also found on the ridge at the west bank of Twante canal. The findings of trade ceramics proved that Twante was as an important transit port to transport goods, particularly for trade ceramics to the Martaban harbour or to Yangon harbour for exporting. Since the decades ago, local peoples who live in Twante have being still searched the interested ceramics shards along on the banks of Twante canal.

There is no proper archaeological report concerning the Twante canal and the period of Twante canal construction. It is assumed that Twante canal had existed as a small river or creek since ancient periods, and had become narrow and shallow for the deposition before 19th century. It became as Twante canal after construction in the 19th century.

It is needed to study the missing link of the history of Twante canal before later half of 19 century. In this report, I explain brief history of Twante canal to trace the history before the canal construction. The information is extracted from the book, "Twante Too-myaung" (Twante Canal) written by U Htan Hlaing.

Ayeyarwady River is the main waterway to use for transportation between Upper Myanmar and Lower Myanmar. But, it cannot directly connect to Yangon to transport export products of Ayeyarwady delta and Upper Myanmar. In this context, Twante canal was essential to connect Toe River and Yangon River to go to Yangon and Mataban areas.

In 1852, British occupied Rakhine (Arakan), Taninthayi (Tenasserim) and the whole part of Lower Myanmar. In 1862, Yangon became as main centre to control all parts of Myanmar by British Government. During that time, Twante situated between Toe River and Kha-now-to creek of Yangon River became as an important to link the two rivers. The early name of Twante was called Kwan-day in Mon language. The people lived in Twante were fisher men and farmers.

After construction of Suez Canal in 1869-70, British government had paid more attention on cultivation of rice in the delta region to export. In 1873, New-pan-su Yoe-nge, a small and shallow creek, was dug to get water for agriculture and for transportation. Tt became as Twante canal. The length of Twante canal is 21 miles and its width is 500 feet to 1000 feet. The narrowest bed is 247 feet.

Before construction of Twante canal, War-ba-lauk-thauk River located in Kwan-cha-kone and Kaw-mue Township, near Martaban gulf was used for transportation. It was 79 miles long and took 16 days to arrive Yangon (this route can be used only 16 days in a month). During low tide time, the ship could not go.

The second route was Pan-hlaing River. It passed through Nyaung-done. It was 84 miles far from the regions of Pahtein, Myaungmya, War-khe-ma etc to Yangon. Twante canal was very helpful for transportation as a short water route until at present.

Twante canal was constructed several times. As the first time, the small and shallow creek was constructed by Indian workers in 1873. Then the construction was continued 25 feet in width and 9 miles in length by the prisoners in 1881. However, there was no water in the canal when there was low tide in Yangon River. In this situation, the big ship could not go through this way.

Waterway is essential transportation mean to transport people and commodities from the Upper Myanmar and the delta region of Lower Myanmar to Yangon harbour. On the other hand, depositing of Pathein River was another demand to extend Twante canal. In accordance with situation, Twante canal was again extended between 1913 and 1917, before the First World War (Htan Hlaing, 1992).

According to the above information, Twante canal had gradually become before late half of 19th century. However, it was main waterway to connect the main rivers for international trade route and local transportation in Myanmar. It would be assumed that the banks of Twante canal must have been deposited by the cause of erosion of the surrounded rivers because it is located between Toe River and Yangon River.

According to the trade ceramic studies as mentioned above, Martaban harbour had played as an important trade port from the 14th century to early half of the 17th century. Twante harbour would be an important transit harbour to transport trade goods especially for trade ceramics to

international trade ports such as Martaban and Yangon harbours, and to distribute local region inside Myanmar because a considerable numbers of ancient kilns are unearthed around the regions of Twante Township. Trade ceramics, manufactured from various sites found in Twante canal reveals that the canal was played as an important waterway for trade ceramics in the early 14th century to the early 20th century.

3. Imported Ceramics in Myanmar

There are 57 finds of imported wares collected in this paper although more than these numbers could be found. Among 57 sherds, 31 are found from Twante canal site, 17 are from Moattama (Martaban) and the left wares are found from Myaugmya-myohaung kiln site, Twante Phayagyi kiln site, Bago-Lagunbyee ancient site and old Bagan inhabitant site respectively.

Among the most common imported wares from China, 11 sherds of celadon plates and bowls are from the products of Longquan kiln, 31 shards of blue and white ware are of Jingdezhen kiln and 7 are from Fujian kiln. 7 shards of blue and white wares are from the products of Europe, and the one blue and white shred is from the product of Japan kiln. Some information of these imported wares found in the

Table1 Imported wares found in Myanmar

No.	Ceramic No.	Tpye		size(cm)			Found site	Produced kiln site	Estimated date
				Mouth	Height	Base			
1	TW.CA.NW-98	Celadon	Plate		4.8	12.3	Twante Canal	Longquan	14AD-15 AD
2	TW.CA.NW-92	Celadon	Plate		3	11.4	Twante Canal	Longquan	14AD-15 AD
3	TW.CA.NW-96	Celadon	Plate		2.8	11.4	Twante Canal	Longquan	14AD-15 AD
4	MM.Shwesi-gone-1	Celadon	Plate	*			Myaungmya-myohaung	Longquan	14AD-15 AD
5	MM.Shwesi-gone-2	Celadon	Plate	*			Myaungmya-myohaung	Longquan	14AD-15 AD
6	MM.Shwesi-gone-3	Celadon	Plate			*	Myaungmya-myohaung	Longquan	14AD-15 AD
7	MM.Shwesi-gone-4	Celadon	Plate			*	Myaungmya-myohaung	Longquan	14AD-15 AD
8	MM.Shwesi-gone-5	Celadon	Plate	*			Myaungmya-myohaung	Longquan	14AD-15 AD
9	MTM032	Celadon	Plate			*	Moattama (Martaban)	Longquan	14AD-15 AD
10	TW.CA.NW-100	Celadon	Bowl		3.5	10.7	Twante Canal	Longquan	14AD-15 AD
11	TW.CA.NW-93	Celadon	Bowl		3.2	6.7	Twante Canal	Longquan	14AD-15 AD
12	TW.CA.MTT-1	Blue and white	Bowl			7	Twante Canal	Jingdezhen	Late 15AD - Early 16AD
13	TW.CA.MTT-2	Blue and white	Bowl				Twante Canal	Jingdezhen	Late 15AD - Early 16AD
14	MTM-073	Blue and white	Bowl	7.8	2.7		Moattama (Martaban)	Jingdezhen	16 AD
15	TW.CA.08-93	Blue and white	Bowl				Twante Canal	Jingdezhen	Late half 16AD - Early half 17AD
16	MTM-077	Blue and white	Bowl	10.7	3.3		Moattama (Martaban)	Jingdezhen	16AD – 17AD
17	MTM-075	Blue and white	Bowl	13	2.8		Moattama (Martaban)	Jingdezhen	Late half 17 AD - 18AD
18	TW.CA.08-16-A	Blue and white	Bowl	14.2	2.5		Twante Canal	Jingdezhen	Late 17AD - Early 18 AD
19	TW.UTT.07-146	Blue and white	Bowl		1.5	4.8	Twante U Than Tint	Jingdezhen	Early half 18AD
20	MTM-074	Blue and white	Bowl		2.6	7.6	Moattama (Martaban)	Jingdezhen	18 AD
21	TW.CA.NW-99	Blue and white	Bowl	12.6	3.4		Moattama (Martaban)	Jingdezhen	18 AD
22	TW.CA.08-43	Blue and white	Bowl	17.1	4.3		Moattama (Martaban)	Jingdezhen	18AD
23	MTM-076	Blue and white	Bowl			4.9	Moattama (Martaban)	Jingdezhen	15AD-18AD
24	MTM-082	Blue and white	Bowl		1.9	4.5	Moattama (Martaban)	Jingdezhen	15AD-18AD
25	MTM-085	Blue and white	Bowl		1.8	7.9	Moattama (Martaban)	Jingdezhen	15AD-18AD
26	TW.CA.08-63	Blue and white	Bowl		2.4	6.7	Twante Canal	Jingdezhen	15AD-18AD
27	TW.CA.NW-140	Blue and white	Bowl				Twante Canal	Jingdezhen	15AD-18AD
28	TW.PYG.K.Ch	Blue and white	Plate				Twante Phayagyi kiln	Jingdezhen	(Late 15 – Early 16AD)
29	TW.CA.NW-109	Blue and white	Plate		4.9	15	Twante Canal	Jingdezhen	Early half 16 - Mid 16AD
30	TW.CA.NW-114	Blue and white	Plate	10.9	5.4		Twante Canal	Jingdezhen	16AD
31	TW.CA08-11-A	Blue and white	Plate	9	2.7		Twante Canal	Jingdezhen	16AD
32	TW.MTT-3	Blue and white	Plate				Moattama (Martaban)	Jingdezhen	16 AD
33	TW.CA.NW-106	Blue and white	Plate		1.7	9	Twante Canal	Jingdezhen	Early half 16AD - Mid 16AD
34	TW.CA.08-26	Blue and white	Plate				Twante Canal	Jingdezhen	Late half 17 AD - Early half 18AD
35	MTM-084	Blue and white	Plate		2.7		Moattama (Martaban)	Jingdezhen	Early half 18 AD
36	TW.CA08-28	Blue and white	Plate	22.7	3.8		Twante Canal	Jingdezhen	Late half 18AD
37	TW.CA08-18	Blue and white	small jar		4	4.9	Twante Canal	Jingdezhen	Late 15 – Early 16AD
38	MTM-079	Blue and white	small jar		2.9		Moattama (Martaban)	Jingdezhen	15AD-18AD
39	Bago.LGB-MTT-5	Blue and white	small jar				Bago.Lagunbyee	Jingdezhen	17AD
40	MTM-4	Blue and white	small jar				Moattama (Martaban)	Jingdezhen	17AD
41	TW.CA.NW-104	Blue and white	Vase				Twante Canal	Jingdezhen	15AD-18AD
42	TW.CA.NW-124	Blue and white	animal				Twante Canal	Jingdezhen	15AD-18AD
43	MTM-081	Blue and white	Bowl		4.1	8.7	Moattama (Martaban)	Fujian	Late 17AD - Early 17AD
44	MTM-078	Blue and white	Bowl		1.6	3	Moattama (Martaban)	Fujian	Late 17 - Early half 18AD
45	TW.CA08-19	Blue and white	Bowl	17.5	4.9		Twante Canal	Fujian	17-19 AD
46	Bagan.YHK	Blue and white	Bowl				Bagan.Yon-hlut-kyun	Fujian	Late half 18 AD
47	TW.CA.NW-127-A	Blue and white	Bowl				Twante Canal	Fujian	18-19 AD
48	TW.CA.NW-115	Blue and white	Plate		4	15.1	Twante Canal	Fujian	Late 16 AD - Early 17AD
49	TW.CA.NW-127	Blue and white	Small jar		3.1	4.1	Twante Canal	Fujian	15AD-18AD
50	TW.CA08-61	Blue and white	Bowl				Twante Canal	Europe	18-19AD
51	TW.CA08-57	Blue and white	Bowl				Twante Canal	Europe	18-19AD
52	TW.CA.08-67	Blue and white	Bowl				Twante Canal	Europe	Late half 19 - early half 20AD
53	TW.CA08-27	Blue and white	Plate				Twante Canal	Europe	Late half 19AD
54	TW.CA08-95,103	Blue and white	Plate				Twante Canal	Europe	18AD-19AD
55	TW.CA08-27	Blue and white	Plate				Twante Canal	Europe	18AD-19AD
56	TW.MTT-7	Blue and white	Plate	38		19	Moattama (Martaban)	Europe	18AD-19AD
57	TW.CA.NW-102	Blue and white	Bowl				Twante Canal	Japan	Late half 19 AD or after 19AD

Remarks: TW.CA.NW= Twante Canal Nyaung-wine monastery, TW.CA.MTT=Twante Canal Myo Thant Tyn, Bago.LGB= Bago Lagunbyee, Bagan.YHK= Bagan Yon-hlut-kyun, MM.Shwesi-gon= Myaungmya-myohaung Shwesi-gon, MTM= Moattama

sites of Myanmar is mentioned as follow in table1, and the distinguished characteristics from some samples will inform among the imported ceramics between the finds found in the sites of Myanmar and from other sites in abroad.

3.1 Chinese Ware

Chinese wares are mostly found of trade ceramics found in archaeological sites in comparison with other trade ceramics. Particularly Chinese ceramics of blue and white ware and celadon are found together with other Myanmar ceramics such as opaque white ware, opaque white glaze and green painted wares, celadon, and unglazed wares.

Two types of Chinese wares such as celadon or green ware and white and blue ware were found together with Myanmar local ceramics of unglazed ware, celadon ware, opaque white ware, white and green ware in several sites in Myanmar.

a. Celadon ware (figure 2): Characteristics of Chinese celadon are curved or molded floral motif at the centre of the interior, a ring of unglazed biscuit (glaze-wiping ring) at the interior for the purpose of stacked firing and also at the outer bottom inside foot-ring of the exterior for the purpose

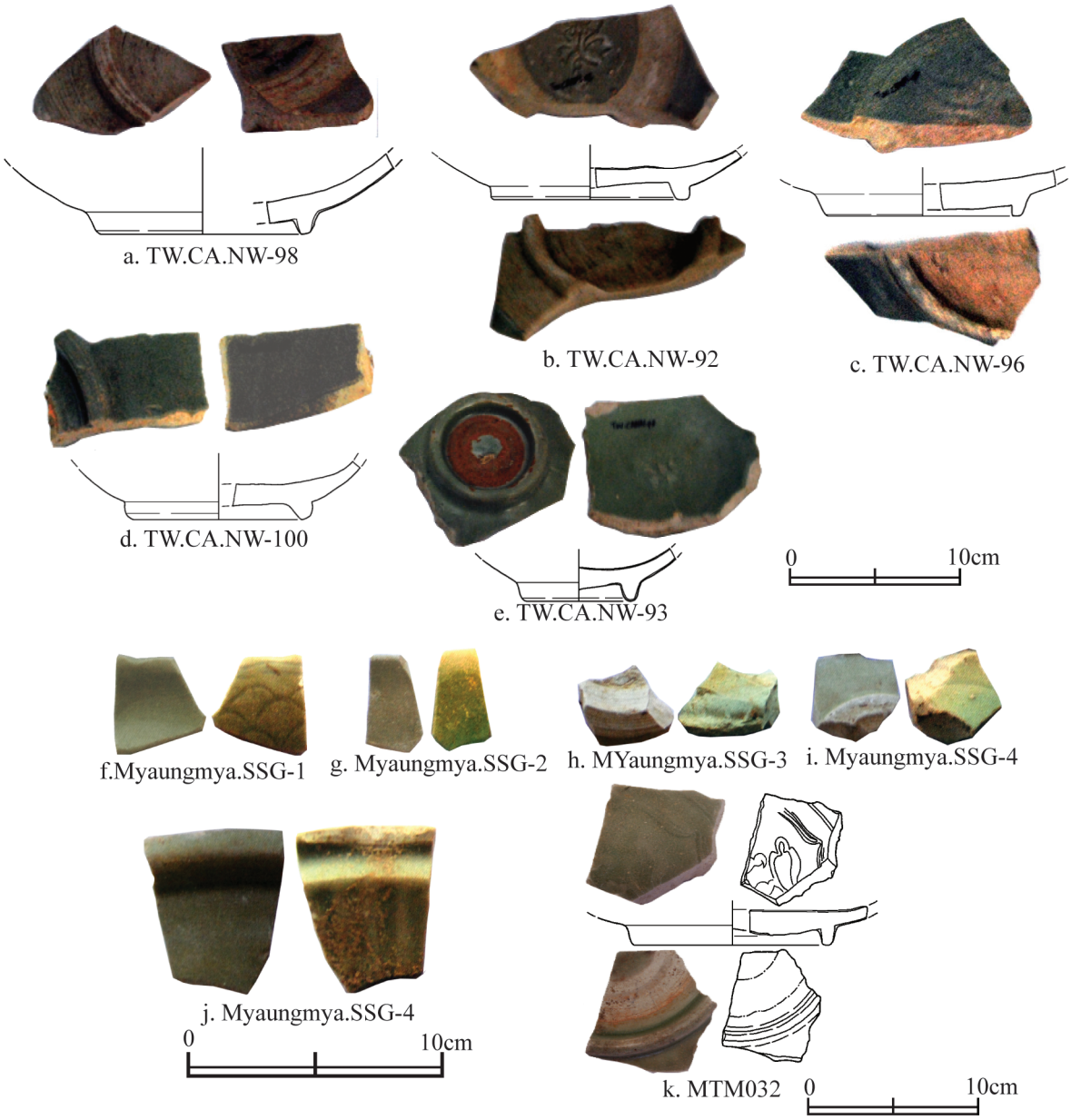


Figure 2 Chinese celadon wares found in Myanmar (Figure1.f - 1.k are from Sasaki tatsuo, Sasaki Hanae, NogamiTakenori, 2004, pp224, fig.111)

to put tubular firing support. The type of un-glazing entirely at the outer bottom inside foot-ring is also found although the basement of foot-rim is glazed. The body of the vessels and foot-rim are commonly thick. The deep foot-ring at the corner of the interior is slightly going to curve down to the centre of the outer bottom. These characteristics of Chinese celadon Longquan wares would be assumed around the end of Yuan dynasty to the middle of Ming dynasty.

The Chinese celadon wares found in Moattama and Myaungmya-myohaung sites are the collections of Sasaki Tatsuo, Sasaki Hanae and Nogami Takenori in 2004 (see figure111, p224). The same making technique of glaze-wiping at the interior surface is found at the two dishes, figure2.a and 2.b. Figure 2.b is with floral motif design at the centre of the exterior. The dish, figure 2.c, is also with floral motif design at the centre of the interior. Olive green glaze is thickly applied on the exterior and interior, but there are not glazed inside the foot-ring at the outer bottom part in all the three dishes.

Three fragments of dishes found in Myaungmya-myohaung Shwe-si-gon site are mouth parts, everted mouth and folded mouth, and the two are from base parts. The dish, figure2.f (MM.Shwesi-gone-1), from Myaungmya-myohaung Shwe-si-gon site is with curved floral motif design that looks like fish scales at the interior, and the dish of figure 2.j is with lotus petals at the cavetto of the interior.

The dish of figure 2.k found in Martaban region is a thick base fragment with floral motif design at the centre of the interior. The similar design is also found at a dish unearthed from Khawr Fakkan site.

The two celadon bowls, figure 2.d and 2.e, are with similar characteristics of making technique although they are different size. Glaze was thickly applied all the parts of interior, exterior and inside foot-ring of the outer bottom as well. However, a ring of unglazed biscuit, wiping glaze was found inside the foot-ring. Floral motif was designed at the centre of the interior of the bowl, figure 2.e.

b. Blue and white ware: Numbers of Blue and white porc -elain Chinese wares are found more than Chinese celadon wares. It would be presumed that all of the Chinese wares were brought to Myanmar through maritime trade route. These Chinese blue and white wares are the products of Jingdezhen kiln, and some are from Fujian kiln. Generally, according to the characteristics of these Chinese trade wares, these were made during Ming Dynasty to Qing Dynasty. The finding of these trade ceramics indicates that the trading period would be between 14th century and 20th century.

1) Jingdezhen kiln (15 – 18 AD)

Chinese blue and white wares, the products of Jingdezhen kiln, are bowl, plate, small jar, small vase and animal figure. Bowls are mostly found among all the finds, and plates are also commonly found. Small jar and small vase were found a few numbers and a fragment of animal figure is also rarely found.

Bowl (figure 3): There are different types of 16 bowl fragments of blue and white wares. The two bowls, figure 2.a (TW.CA.MTT-1) and 2.b (TW.CA.MTT-2) are similar design and nearly the same size. The floral design with cross sign is painted at the centre inside of two circles at the interior and the exterior is also with floral design.

The similar design with cross pattern flower is found at the centre of interior of a blue and white plate unearthed from the excavation of a porcelain pit in No.1, yard of Pre-Maojiawan, Xicheng District, Beijing. This excavated Chinese plate is assumed that it would be in the late 15th century and the early 16th century. It would be assumed that Chinese blue and white bowls with similar pattern found in Twante canal might also be the same period as the excavated find in Maojiawan site.

Chinese blue and white wares with similar type and design pattern are found at the two bowls at the excavation of Julfar site in UAE. The floral design with cross sign inside the two circles at the centre of the in interior of JJ.Ch-1 is similar pattern to Chinese bowls found at Twante Canal (see figure3.1&3.b), and the pattern of floral design on the exterior is exactly the same pattern and nearly the same foot-ring size between the bowl, JJ.Ch-2 from Julfar site and figure3.a, TW.CA.MTT1 from Twante canal site. These archaeological ceramic findings testify trading relationship among the Asian countries in those times.

Figure3.c (MTM-073) is a sake cup with everted mouth similar to Chinese sake cup unearthed at the excavated area

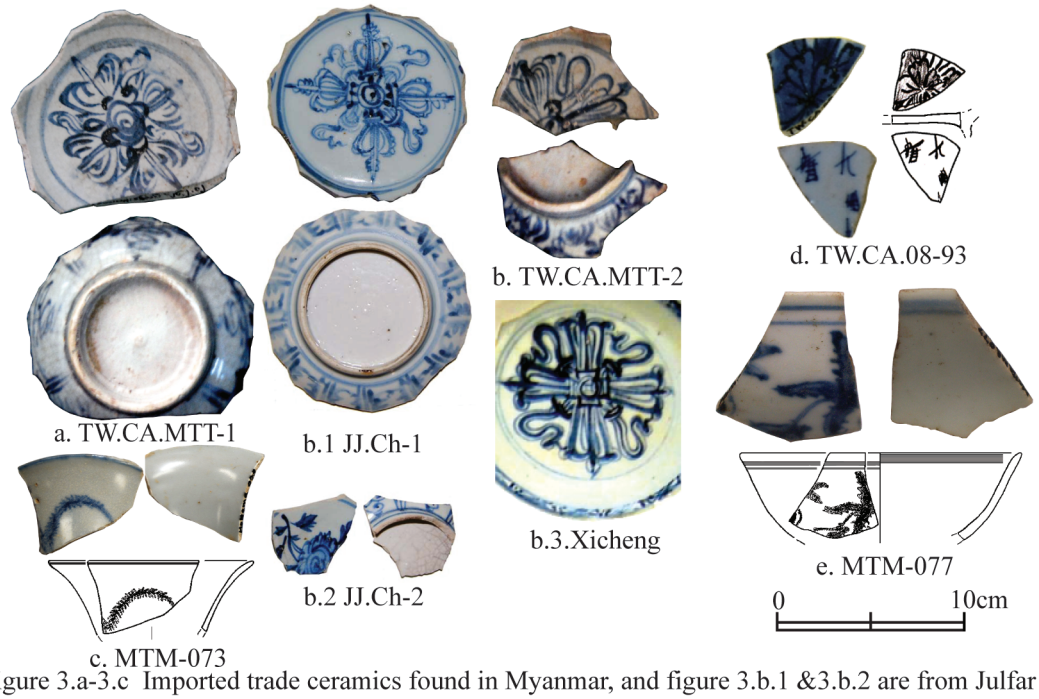


Figure 3.a-3.c Imported trade ceramics found in Myanmar, and figure 3.b.1 &3.b.2 are from Julfar site (from Archaeology Department,Kanazawa University) and figure3.b.3 is from excavation of Pre-Maojiawan, Xicheng District, Beijing (from Beijing Municipal Institute of Cultural Relics, 2008 (15 - 16 AD) and Figure 3.d,&e Imported trade ceramics found in Myanmar (16- 17AD)

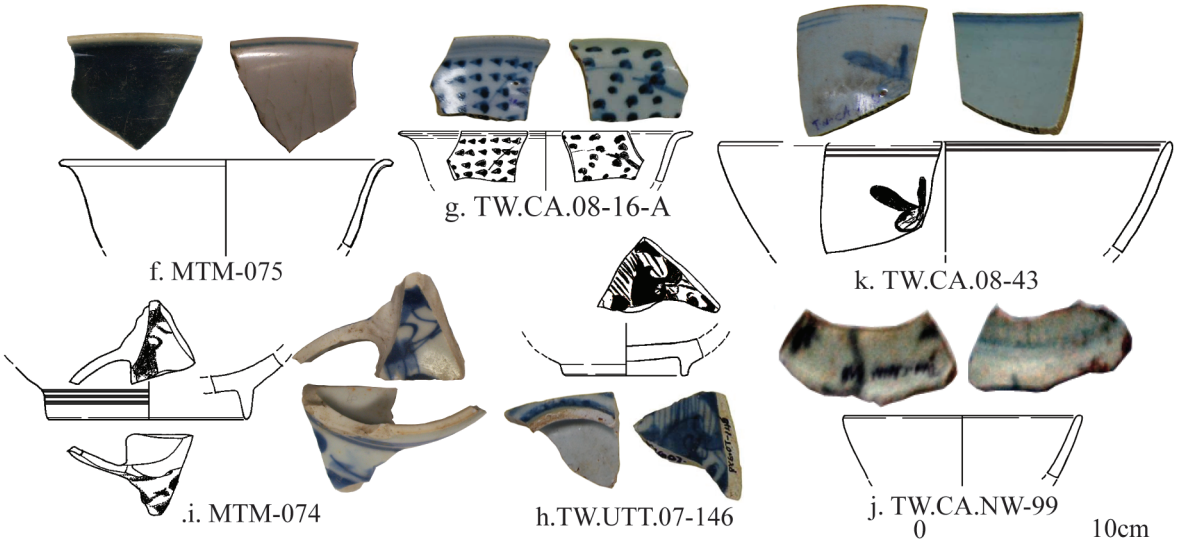


Figure 3.f-k Imported trade ceramics found in Myanmar (17- 18AD)

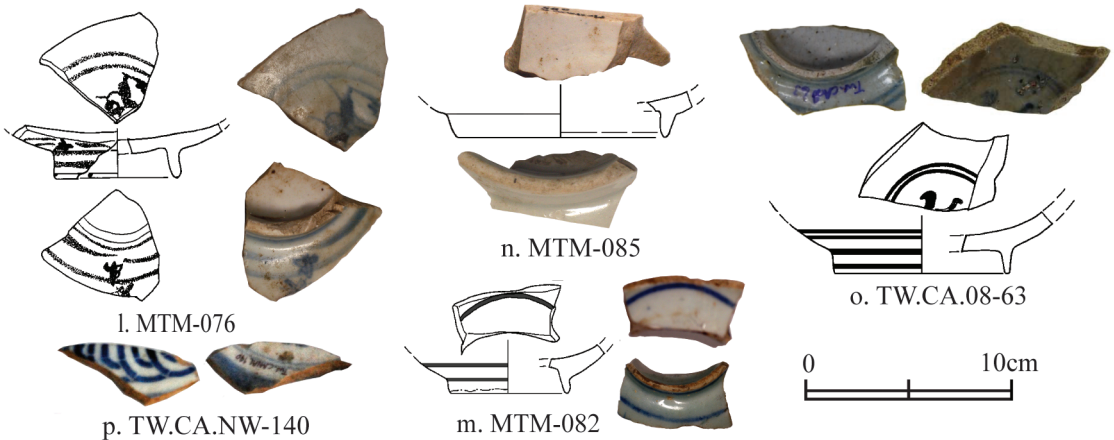
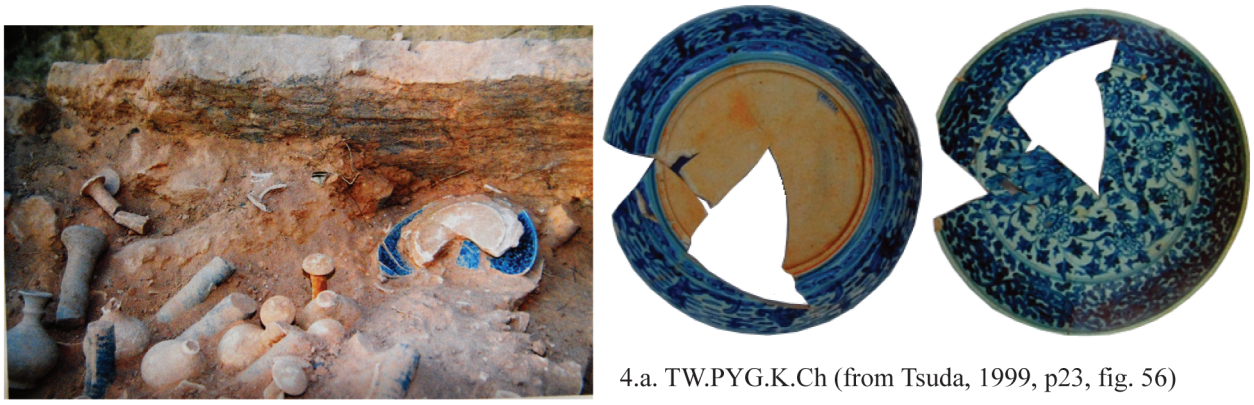


Figure 3.l-p Imported trade ceramics found in Myanmar



4.a-f Chinese blue and white plates from the products of Jingdezhen kiln found in Myanmar (15 - 16AD)

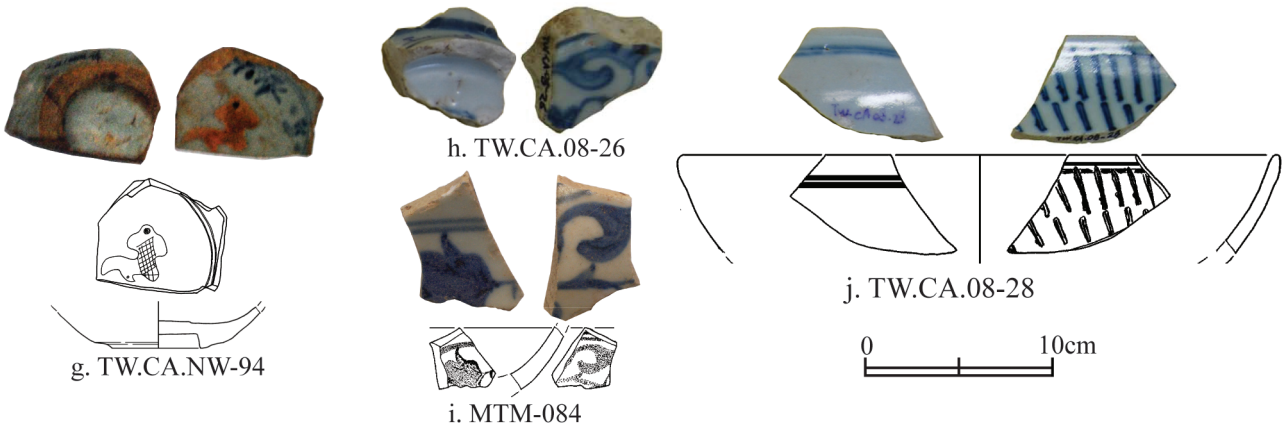


Figure 4.Chinese blue and white plates from the products of Jingdezhen kiln found in Myanmar (fig.4.g - j 16 - 18 AD, & fig.4.h-j -17 - 18AD)

of SF489, Halata site (See Hakata 1987, No.308 of figure 37, p58). According to the records of Hakata site excavation; this type of Chinese ware could be dated in the 16th century.

Figure 3.d (TW.CA.08-93) is only a fragment of base part inside foot-ring. Although its size could not be measured, Chinese letters, “大明 － 曆 －” are written at the outer surface of base part. Floral design is painted at the centre of the interior. All of the written letters could not be read

because it is imperfect shard. However, the same letter could be identified from the small article described about Chinese letters written on the outer bottom of blue and white ware (http://54678725. at.webry.info/200808/article_2.html). Chinese letter “大明萬曆年製” is painted at the bottom of this Chinese blue and white ware. According to the Chinese chronology, Banreki era was from 1573 to 1620.

A porcelain shard of Chinese blue and white bowl (figure.3.h) unearthed together with Myanmar celadon wares was found in a place about 3 feet from the top surface in the compound of U Than Tint which is located about 300 feet to the west of the Phaya-gyi excavated kiln, Phaya-gyi village in Twante township. This Chinese blue and white bowl is assumed around 17th-18th centuries. Its design is similar to the design of Chinese wares unearthed from Wolio castle site, Indonesia.

Plate (Figure 4): There are nine plate fragments. A plate of Chinese blue and white ware (figure4.a) was excavated from Phaya-gyi kiln. It is designed with a peacock among scrolling peonies in the centre surrounded by a dense lingzhi scroll at the interior and galloping horses, fishes, elephants etc. Although on the both sides of interior and exterior is enameled, the inside foot-ring of outer bottom is not enameled. It is presumed that the age of the plate would be later 15th century to early 16th century (see Tsuda 1999).

A small plate, figure4.g (TW.CA.NW-94) is designed with small fish figure and water leave and two circle lines is impressed at the centre of interior after glazing. The basement of foot-ring is unglazed. The same type with similar design of Chinese blue and white plates was excavated from the porcelain pit in No.1 Yard of Pre-Maojiawan, Xicheng District, Beijing and from SE482, Hakata site (see Hakata 1987, No.183 & 184 of figure.31, p51). According to the report, this type of Chinese ware from Moajiawan site is during the middle period of Ming dynasty. Excavated finds from Hakata site is presumed about 18th century.

The design pattern of the dish Figure4.j (TW.CA08-28) is commonly found in imported Chinese blue and white ware. The design composed of oblique short lines at the interior and two horizontal lines are arranged below mouth on the exterior. This similar type with same pattern of decorated design is found from the excavations of the Masafi site (see Sasaki 2007, fig.48, ,p275) and Baston de San Diego site in Iniramuros, Manila (see Takenori Nogami, Wilfredo P.Ronquillo, Alfredo B.Orogo, Nida T.Cuevas, Kazuhiko Tanaka, 2006, No.2&3 of figure18, p50). This type of Chinese blue and white ware of product of Jingdezhen is assumed later half of 18th century.

As mentioned in the above, a small Chinese blue and white jar is uncovered inside the old Lagungyee pagoda, Bago, and small vase and animal figure are also found (Figure 5).

2) Fujian kiln

It could be confirmed that that Chinese blue and white wares are products of Fujian kiln imported to Myanmar between 16th and 19th centuries along the Maritime trade route of East and Southeast Asian. A plate, a few numbers of bowls and small jar can also be confirmed as the products of Fujian kiln.

Bowls (Figure 6): In the bowl, figure6.a (MTM-081), some part of glaze is wiped as circle about 2cm in width at the interior side to pile up bowls to fire at the same time. Single line of blue circle is painted at the interior and on the exterior, horizontal single line is at the joint of foot-ring and floral design is on the body. Chinese blue and white wares, product of Fujian kiln with similar making technique of wiping glaze, are found at the Wolio castle site (NPO Association of Asian Cultural Properties Cooperation, 2007, figure.207, 208, and 209, p179, figure232, p182). These are assumed around in the late 17th century to early half of 18th century. Some bowls from the excavation of Woliio castle are with stamped design and painted design at the centre of the exterior.

And a small bowl, figure6.b (MTM-078) is also the same making technique of wiping glaze at the interior side as MTM-081. Chinese letter “ 正 ” is written at the centre of outer bottom inside the foot-ring. It would be presumed from between in the late 17th century to early 18th century.

The fabric colour of the bowl, figure6.c (TW.CA08-19) is light brown (HUE 10YR7/4) and the decorated design on the exterior is olive brown colour. The mouth rim is slightly everted. This type of Chinese bowl is unearthed

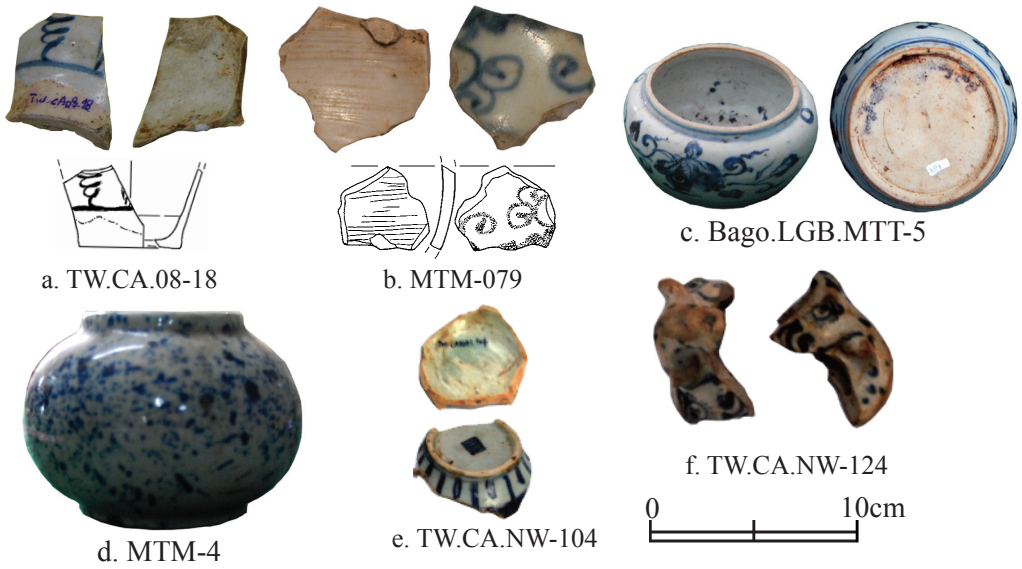


Figure 5 Chinese blue and white small jar, vase and animal figure from the products of Jingdezhen kiln found in Myanmar

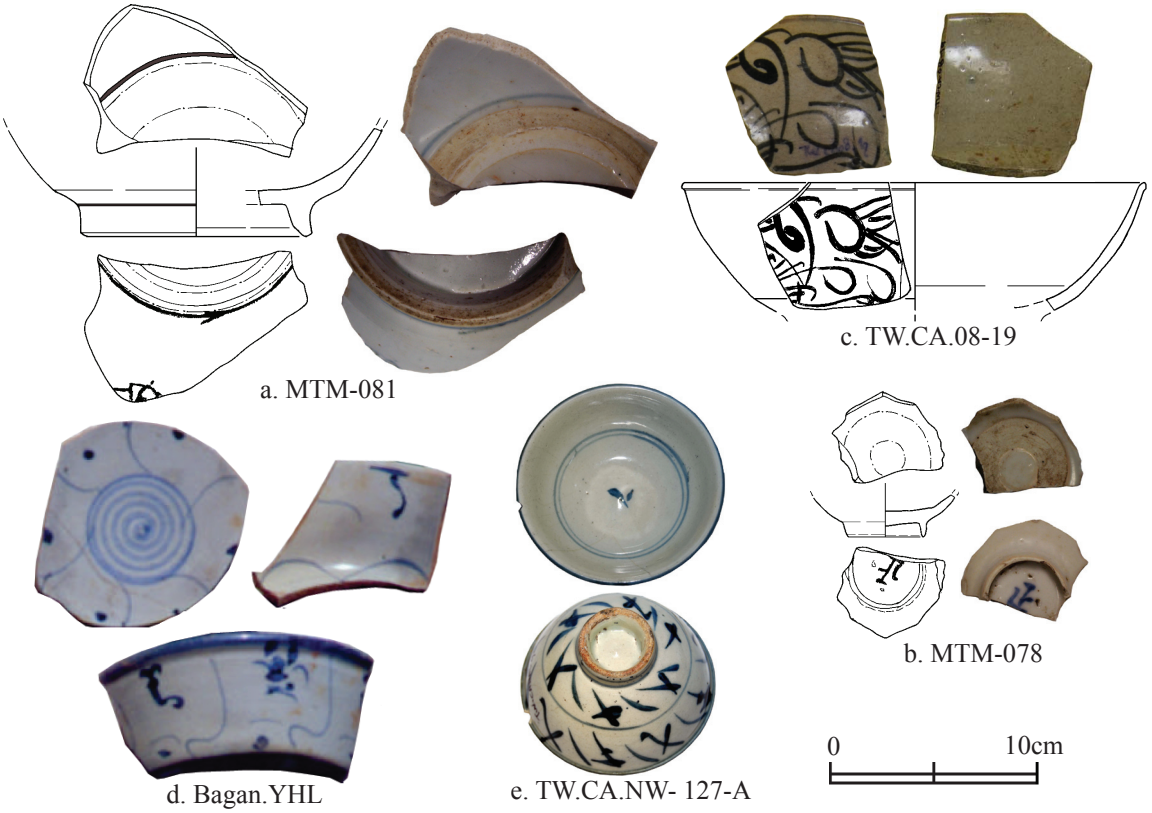


Figure 6 Chinese blue and white bowls from the products of Fujian kiln found in Myanmar (17 - 19AD)

at Tirtayasa site, Indonesia (NPO Association of Asian Cultural Properties Cooperation, 2007 figure5, p136, figure 296, p190) and the site area located between Masafi fort and Masafi mosque, United Arab Emitites (Sasaki, 2007 figure48, p275). According to the excavation report of Tirtayasa site, this type of Chinese bowl of Fujian kiln would be presumed about later 17th century to 18th century, and the similar type unearthed from the Masafi site, United

Arab Emirates is assumed later half of 18th century to 19th century.

The bowl, figure6.d, was excavated together with human skeletal at site of Yon Hlut Kyun in Bagan. The decorated design on some plates and bowls with same shape and different shape are similar to the excavation of Wolio castle site (see NPO Association of Asian Cultural Properties Cooperation, 2007, figure.222,226,227 and 228, p181-182). It would also be the product of Fujian kiln and it is about later half of 18th century.

Figure6.e (TW.CA.NW-127-A), the small bowl is with leaf design inside the circle at the interior, and cross marks design is painted on the exterior between two circle lines. The basement of foot-rim is unglazed. The same shape and design is found in Chinese bowl of the product of Fujian kiln from the excavation of Masafi fort site, United Arab Emirates (Sasaki, 2007, figure45, p272). It would be presumed around 18th-19th centuries according to the records of excavation.

Plate (Figure 7): Figure 7 (TW.CA.NW-115) is a base part of dish. The joint of exterior between waist and foot-ring is not shaved exactly like as other common dish. This type is similar to the Chinese blue and white dish, unearthed from Wolio castle (see NPO Association of Asian Cultural Properties Cooperation, 2007, figure13-6, p70). It is presumed later 16th century to early 17th century and the product of Zhangzhou kiln.

Small jar (Figure 8): Figure 8 (TW.CA.NW-127) is a base part of small jar. It is assumed that the age of the jar is about 17th to 19th centuries and would be the product of Fujian kiln.

The Chinese trade ceramics wares could be generally confirmed as the products of Longquan kiln around 14th -15th centuries and the most white and blue wares are products of Jingdezhen kiln between 15th and 18th centuries. Some Chinese ware could be identified as the products of Fujian kiln from about 16th to 19th centuries in China. Different types of Chinese wares indicate that trading of Chinese ceramics would have been taken for a long period in Myanmar as well.

4. European ware (18 – 20AD)

Some European shards of plate and bowl are found at the bank of Twante canal. These are blue wares and white wares and monochrome coloured glazed wares. According to the findings of similar type of Holland, Maastricht ceramic and other European wares unearthed at the sites of Tirtayasa and wolio castle, age of European ceramics found in Twante canal is assumed between the later 18th century and the early 20th century.

Bowl (Figure 9): Figure 9.a (TW.CA08-61) is monochrome bright blue colour bowl. It is small bowl with straight mouth, and fabric colour is pale red with the same type of the plate TW.CA08-95,103.

Figure 9.b (TW.CA08-57) is a small bowl with straight mouth. The horizontal lines with deep blue colour are around near the mouth and on the body part at the interior. It is assumed that age of the product of England and would be in 18th-19th centuries.

Figure 9.c (TW.CA.08-67) is a base part of pedestal bowl with short foot. Deep blue coloured floral design is decorated at the centre of at the centre of inner bottom part of the bowl. The similar type of bowls from the product of Maastricht, Holland is unearthed from the Tirtayasa site and Wolio castle ruins site. This type of Holland ceramics are assumed from about late half 19 century to early half 20 century (see NPO Association of Asia from Wolio castle, p71).

Plate (Figure 10): Figure 10.a (TW.CA08-27), a European dish with folded mouth rim, and dark blue coloured floral design is made at the interior part. Exterior part is without design, and fabric of the dish is light red colour. This similar type is found at Wolio castle site, Indonesia (see NPO Association of Asian Cultural Properties Cooperation 2007, figure299, p122). It would be assumed about later half of 19th century.

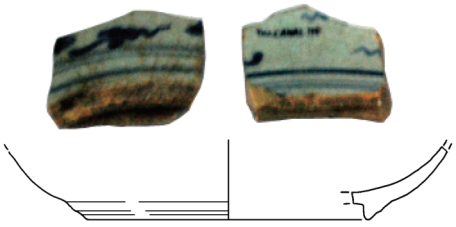
The plate, figure 10.b (TW.CA08-95,103), with folded mouth, is a monochrome bright blue enamel ware, and the fabric colour is light red and characteristic is similar to figure 10.a. It is presumed in around 18th-19th centuries.

The dish, figure 10.c (TW.MTT-7) is designed by blue floral on the whole part of interior and floral band around the body on the exterior. It is also assumed in 18th-19th

centuries.

5. Japanese ware (Figure 11)

The feature of the bowl, figure11 (TW.CA.NW-102), is same as the feature of Hizen blue and white bowl. The two scars of small spot found in the inner surface is the characteristic of using something to support to pile up each other while the bowls were firing. Floral design is painted at the centre of interior and above the three lines is arranged with small circle spots on the exterior. Similar design is found in Hizen blue and white ware unearthed at Wolio castle site, Indonesia (see NPO Association of Asian Cultural Properties Cooperation 2007, figure 300, P190). It is assumed later the age of that bowl is in later half of 19th century or after 19th century.



TW.CA.NW-115

Figure 7 Chinese blue and white plate from the product of Fujian kiln found in Myanmar (16 - 17 AD)

.TW.CA. NW-127

Figure8 Chinese blue small jar from the products of Fujian kiln found in Myanmar (17 - 19AD)

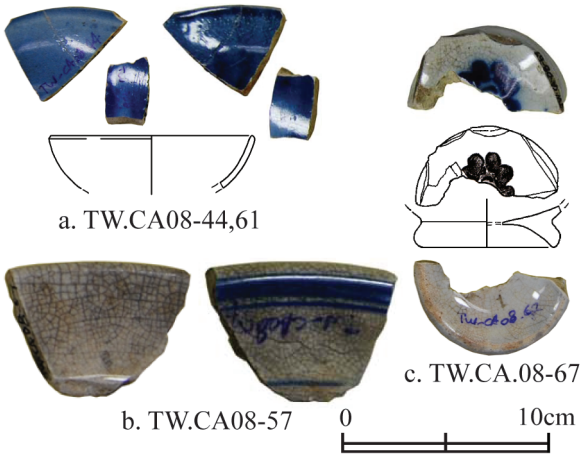
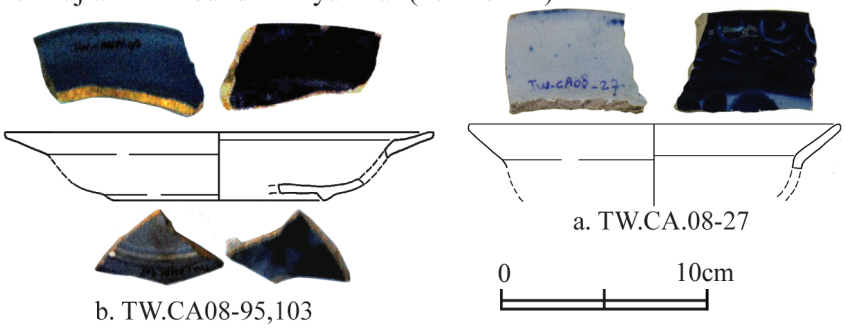


Figure9 European blue and white bowls found in Myanmar (18 - 20AD)



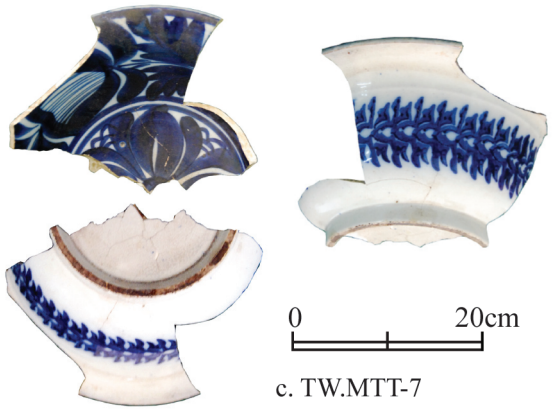


Figure10 European blue and white plates found in Myanmar (18 - 20AD)

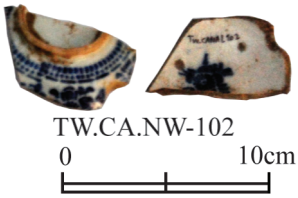


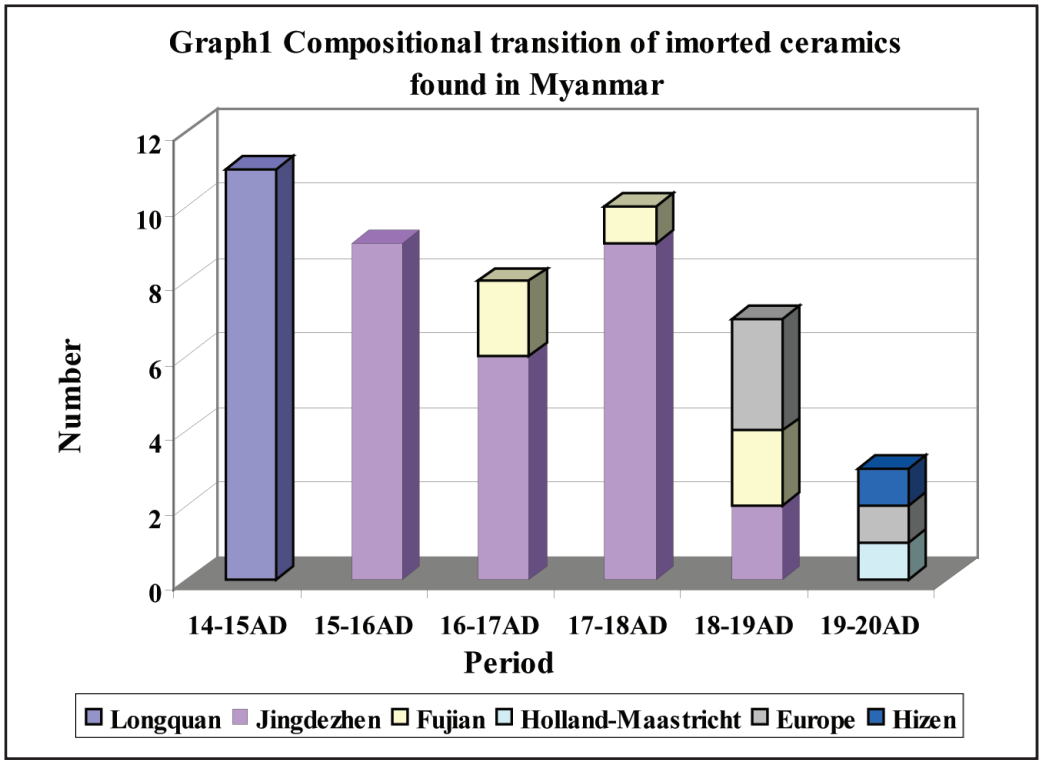
Figure 11 Japanese blue and white bowl I found in Myanmar (19 - 20AD)

6. Observation on the Imported Ceramics and local wares found in Myanmar

Imported wares: Characteristic of imported ceramics indicates that the period of trade ceramics would be between the 14th and 20th centuries (Table 2 & Graph 1). Chinese celadon wares of Longquan kiln were exported during 14th and 15th century. Most of the finds of Chinese blue and white porcelain of Jingdezhen kilns were exported to Myanmar between 15th and 18th centuries. Chinese blue and white wares of Fujian kiln would be lasted around 16th and 19th centuries. European ceramics wares were between 18th and 20th centuries. As mentioned in the graph, it assumed that Chinese blue and white porcelain were profusely exported in the 15th and 18th centuries to Myanmar by using Twante trading port (Twante canal) along the maritime trade route. Characteristics and design of most imported ceramics found in Twante canal are same as the Chinese wares excavated in Indonesia, United Arab Emirates and

Table2 Compositional transition of imported ceramics found in Myanmar

Manufactured kiln/site	Ceramic type	14-15AD	15-16AD	16-17AD	17-18AD	18-19AD	19-20AD	Total
Longquan	Bowl	2						2
Longquan	Dish	9						9
Jingdezhen	Bowl		3	3	7			13
Jingdezhen	Plate		6	1	2	1		10
Jingdezhen	Jar			2		1		3
Fujian	Bowl							
Fujian	Plate			2	1	2		5
Maastricht	Bowl						1	1
Europe	Bowl					2		2
Europe	Plate					1	1	2
Hizen	Bowl						1	1
Total		11	9	8	10	7	3	48



Japan. It could be identified that most of the Chinese blue and white wares found in Myanmar mentioned in this paper are the products of Jingdezhen kilns and the others are the products of Fujian kilns.

A considerable numbers of Longquan celadon produced in Zhejiang province were exported throughout Southeast Asia between 13th and 15th centuries. These celadon wares served as models for the celadon made in Myanmar but there is no evidence for the presence of Chinese potters in Myanmar or t influence of Chinese potters on celadon production in Myanmar (Myo & Rooney 2001).

In accordance with historical records, Dutch merchants settled their trade offices in Syriam (Thanlyin) and Arakan {Rakhine} in early half of 17th century. Trading activities at Martaban harbour probably stopped in 1613 (see Adhyatman in 1984, pp63-66). Although Martaban continued her trading up to some extent, Twante canal became an important trade port in Myanmar for international trading during those periods.

Contemporary Myanmar local wares (figure12):

The findings of Chinese celadon and Chinese blue and white wares inside the kiln#1 and kiln#3 of Myaungmya-myohaung, Chinese blue and white plate unearthed at Phaya-gyi kiln in Twante and U Than Tint compound site indicate the relationship between the imported Chinese ceramics and Myanmar local ceramics. It is found that the imported ceramics supported Myanmar ceramic technology development although Myanmar potters made ancient Myanmar ceramics by their own style.

According to the excavation report of Phayagyi kiln, various types of unglazed vase and firing stand-supports were mainly found inside firing chamber of the kiln rather than other types of celadon wares although different types of Myanmar ceramics were found near the kiln. It is found that, in this kiln, unglazed wares would firstly be fired in advance within a short time before final glazing to fire.

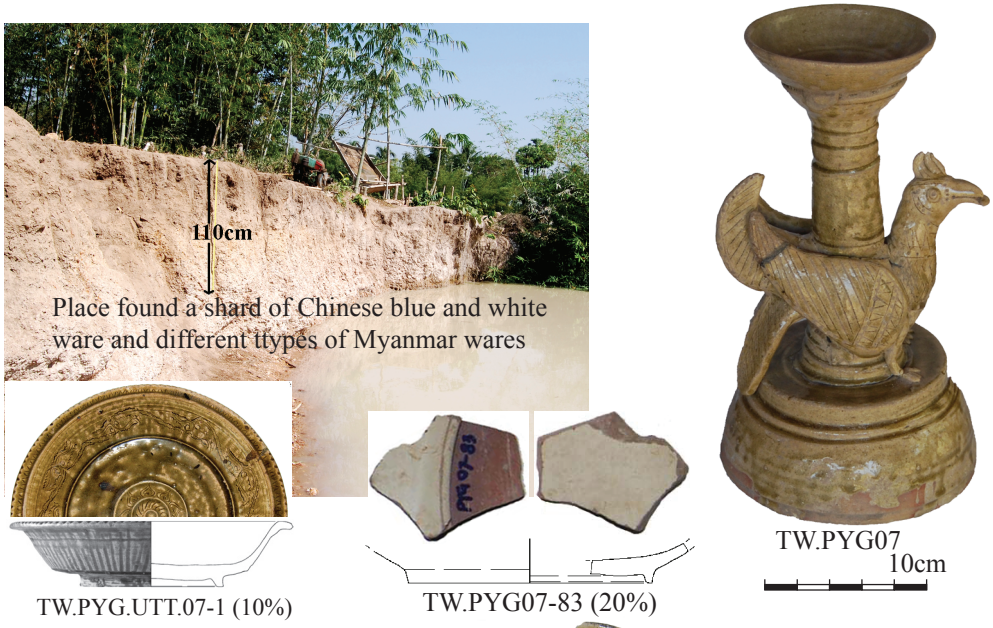
It was assumed that Phaya-gyi kiln was used to manufacture particularly for celadon wares before later 15th century according to the age of Chinese blue and white plate unearthed at the said kiln site (see Tsuda, 1999, p22). Different types of celadon and unglazed wares would be fired alternately many times in this kiln. There found different types of celadon wares and unglazed wares, dishes, bowls, vases, jars, animal figures, weight, firing supports, together with Chinese white and blue dish. So, it is proved that age of Myanmar local wares found together with Chinese blue and white ware would be the same age of Chinese ware.

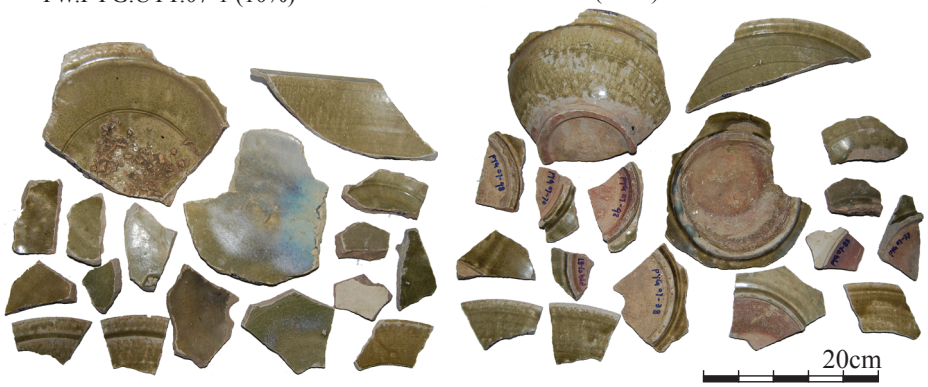
Various types of celadon wares found at U Than Tint compound near Phayagyi kiln would be the products of the Phayagyi kiln or other different kilns near the site. Age of these wares is generally assumed same as the period of the Phayagyi kiln.

Other different kinds of Myanmar ceramic such as opaque white ware and green ware are also found together with celadon wares. There has not yet found source of firing opaque white and green wares in the celadon kilns of Twante although some opaque glazed wares were found in Phayagyi kiln site and another site, U than Tint compound.

Actually, characteristics of the making technique of opaque glazed wares such as white wares and green and white wares are the same. A few lines incised by using some tools like comb are commonly found at the waist part and around joint of foot-ring on the exterior in white ware and green and white ware of dish and bowl. However, the opaque white dish found at U Than Tint compound is distinguished. There has not found any incised lines at the waist part and around the joint of foot-ring like the common opaque glazed ware mentioned above. It is assumed that making style is similar to celadon dish although fabric colour and glaze type are same as other opaque glazed wares. Perhaps this type of opaque white dish would be the oldest type among opaque white dishes. Its age same as the celadon wares found at U Than Tint compound. It is assumed that the potters used the site as a store to keep different types of glazed wares and unglazed wares after firing before distribution to other different places.

The age of different types of celadon wares found at U Than Tint compound would be estimated as early as before 15th or 16th centuries until 17th-18th centuries. Age of some celadon wares and opaque white dish would be earlier than the excavated finds found inside the Phayagyi kiln and Chinese blue and white bowl (figure3.h) found in U Than





a. Myanmar glazed ware unearthed from U Than Tint compound site, Phayar-gyi, Twante

b. Some unglazed wares found in Twnate canal site

c. Some shards of Celadon wares, white ware and green and white wares found in Twnate canal site

Figure 12.a, b & c Unglazed wares and glazed wares uncovered in Twante sitess

Tint compound site. It is assumed about 17th-18th centuries.

Periods of various types of Myanmar local wares found in Twante canal are different. A considerable numbers of Celadon ware, opaque white ware, green and white ware, unglazed ware are found together with imported ceramics. The celadon wares found in Twante Canal are the products of Twante kiln. Simple design of incised lines and lotus petals were decorated in some dishes and bowls. Opaque white wares particularly dishes and bowls, green and white wares are profusely found. All the finds of opaque white dish and bowl were made by the same making technique. Incised lines using by some tool are commonly found in all of opaque white wares. However, the features of different types of firing method, glazing style and shape among the white wares found in Twante canal site indicates that these opaque white wares are from the products of different kilns and ages. We can guess that production Myanmar celadon would be started in the 14th century and abundantly manufactured in the 15th or 16th centuries and gradually going to vanished making celadon about the late 17th century and after. The earliest opaque white ware would be introduced as early as in 15th century and profusely manufactured between 16th-17th centuries, and producing opaque white ware would be concluded in later century.

At present, it is assumed that Myaungmya-myohaung kiln probable made opaque green and white ware although it was particularly used to produce fire stone ware jar, unglazed jar, celadon wares. It would be presumed that the three spurred solid disc supports found in the sites were used in the manufacture of green and white glazed ware in some of Ngaputaw kilnsMany shards of white and green glazed wares were found from the trading port on the eastern bank of Ngaputaw (Myo 2003, p29). There found three scar marks at the interior of some opaque white wares found in Twante canal. Indeed, any celadon wares of Twante kilns does not find such kind marks at the interior like Ngaputaw and Myaungmya-myohaung kilns. So, it is assumed that the white wares with three spurred marks at the interior are the products of Myaungmya or Ngaputaw kilns although it could not be said exactly whether opaque white wares were fired in these kilns. However, the findings of some celadon wares with three scar marks often found at the interior side and three spurred ring supports inside Myaungmya kilns and Ngaputaw kilns are the evidences of firing this type of glazed wares in these kilns.

7. Conclusion

The findings of imported ceramics have reminded to consider inter-relationship among the trade ceramics, trading countries and producing periods. Twante canal must be an ancient harbour to export particularly ceramic wares. The ancient kilns and its finds at Twante canal are reliable sources to link Myanmar ceramic chronology because imported ceramic shards were unearthed at Phaya-gyi, Twante kiln, and a considerable numbers of imported trade ceramics uncovered at Twante canal. It reveals that it is necessary to clarify the period of Twante canal too. Generally, ordinary Myanmar people know that Twante canal was constructed in the later half of 19th century.

Actually Twante canal played as an important port in the early 14th century same period as Martaban harbour. While Martaban played as a main port for trading goods, Twante harbour might be an essential transit port for transporting goods to the main harbours because most of the ancient ceramic kilns were located in the delta region of Lower Myanmar.

It is cleared that Twante harbour might have been used to transport import and export ceramics which were manufactured not only the kilns located in Twante region but different kilns located in Ayeyarwady delta such as Pathein and Myaungmya. On the other hand, it is necessary to consider whether Twnate canal was used as a main ancient habour or not particularly for trade ceramics during that time.

The relationship among the trading countries and type and characteristic of trade ceramics could be confirmed by the trade ceramics found in Myanmar sites and the sites in the United Arab Emirates, Indonesia, Philippines, China and Japan. It is assumed that the ceramic trading was boomed during the 14th to 17th -18th centuries by using Twante harbour particularly for Chinese wares; European ware and Japanese ware were in the 18th to early 20th centuries.

Findings of a considerable numbers of Myanma celadon and white opaque wares found at the sites in United

Arab Emirates proved that Myanmar ceramic wares were exported to abroad. Myanmar wares, the products of Twante kiln, could be identified by Petrographic Analysis (Hanae SASAKI&Tatsuo SASAKI, 2002). Martaban jar and opaque white ware unearthed at the site of Indonesia were between 16th to 17th centuries (see NPO Association of Asian Cultural properties Cooperation 2007, p67). The archaeological findings of Myanmar exported trade ceramics tell us that Myanmar ceramics had been mainly exported to the East, Middle East and Southeast Asian countries between 14th century and 17th century.

The similar characteristics are found between the Myanmar local wares such as celadon and opaque white ware found in Twante canal and Myanmar exported wares unearthed from such sites of Julfar, Japan etc. It is clear that Myanmar trade wares such as celadon and white ware were exported during the period between 14th and 17th centuries, and imported ceramics from East Asia, Southeast Asia, Middle East and Europe came to Myanmar using through by Twante canal from about 14th century to 19-20 century.

In conclusion, Martaban harbour was a busy harbour in the 14th century. The big glazed jars or Martaban jars and other goods were exported from the port of Martaban. However, it would be presumed that the exported Martaban jars were between 14th and 17th centuries and these were produced at different kilns located in Lower Myanmar, particularly the kilns of Twante and Bago. Previous report mentioned that Martaban harbour was stopped after the Burmese (Myanmar) attack in 1613 (Scott O'Connor, 1904). According to Myanmar ceramic history, the earliest potters, Mon people, were from Twante. Myanmar king brought Mon potters to Upper Myanmar to produce ceramics after conquest the Lower Myanmar. The trade ceramics indicate that maritime was a main trading route in the 14th century until 20th century along the sea route countries of East, Middle East and Southeast Asian countries and Myanmar.

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